

an alternate layer comprising an n-cycle (n: an integer) laminate of a basic cycle of a two-layer structure of a high-refractive index layer and a low-refractive index layer each having an optical film thickness of  $\lambda_1/4$  or  $\lambda_2/4$  respectively at the reference wavelength  $\lambda_1$  or  $\lambda_2$ ; and

a thin-film adjusting layer comprising each one of the high-refractive index layer or the low-refractive index layer having an optical film thickness of  $\lambda_1/8$  or  $\lambda_2/8$  disposed on both sides of the alternate layer;

wherein the alternate layers of the first and second dielectric multilayer films respectively comprise different combinations of substances.--

--8. (New) The polarizing beam splitter according to claim 7, wherein the light-transmissive substrate comprises an optical glass for polarizing optical system having a photoelastic constant C in the range of substantially zero with respect to a wavelength in a range of about 0.4  $\mu\text{m}$  to about 3.0  $\mu\text{m}$ .--

--9. (New) The polarizing beam splitter according to claim 7, wherein the alternate layer of the first dielectric multilayer film comprises a combination of a high-refractive index substance of  $\text{TiO}_2$  and a low-refractive index substance of  $\text{SiO}_2$ ; and

the alternate layer of the second dielectric multilayer film comprises a combination of a high-refractive index substance of  $\text{TiO}_2$  and a low-refractive index substance of  $\text{Al}_2\text{O}_3$ .--

--10. (New) The polarizing beam splitter according to claim 7, wherein the alternate layer of the first dielectric multilayer film comprises a combination of a high-refractive index substance of  $\text{TiO}_2$  and a low-refractive index substance of  $\text{SiO}_2$ ; and

the alternate layer of the second dielectric multilayer film comprises a combination of a high-refractive index substance of  $\text{ZrO}_2$  and a low-refractive index substance of  $\text{MgF}_2$ .--

--11. (New) The polarizing beam splitter according to claim 7, wherein the first and second dielectric multilayer films are disposed in a liquid medium having substantially the same refractive index as that of the light-transmissive substrate.--

--12. (New) A polarizing beam splitter comprising  
a light-transmissive substrate; and  
a dielectric multilayer film disposed on the substrate, the dielectric multilayer film comprising:

a first dielectric multilayer film comprising an alternate layer which includes a first high-refractive index layer and a first low-refractive index layer each having a design reference wavelength  $\lambda_1$ ; and

a second dielectric multilayer film comprising an alternate layer which includes a second high-refractive index layer and a second low-refractive index layer each having a design reference wavelength  $\lambda_2$ ;

wherein the design reference wavelength  $\lambda_2$  is different from the design reference wavelength  $\lambda_1$ , and wherein the alternate layers of the first and second dielectric multilayer films respectively comprise different combinations of substances.--

--13. (New) The polarizing beam splitter according to claim 12, wherein the alternate layer of the first dielectric multilayer film comprises an n-cycle (n: an integer) laminate of a basic cycle of a two-layer structure of the first high-refractive index layer having an optical film thickness of  $\lambda_1/4$  and the first low-refractive index layer having an optical film thickness of  $\lambda_1/4$ ; and

the alternate layer of the second dielectric multilayer film comprises an n-cycle (n: an integer) laminate of a basic cycle of a two-layer structure of the second high-refractive index layer having an optical film thickness of  $\lambda_2/4$  and the second low-refractive index layer having an optical film thickness of  $\lambda_2/4$ .--

-14. (New) The polarizing beam splitter according to claim 12, wherein the first high-refractive index layer, the first low-refractive index layer, the second high-refractive index layer, and the second low-refractive index layer respectively comprise different combinations of at least three substances.--

--15. (New) The polarizing beam splitter according to claim 14, wherein one of the first high-refractive index layer and the first low-refractive index layer comprises a first substance and the other of the first high-refractive index layer and the first low-refractive index layer comprises a second substance;

one of the second high-refractive index layer and the second low-refractive index layer comprises the first substance and the other of the second high-refractive index layer and the second low-refractive index layer comprises a third substance; and

the first substance, the second substance, and the third substance are different from one another.--

--16. (New) The polarizing beam splitter according to claim 14, wherein one of the first high-refractive index layer and the first low-refractive index layer comprises a first substance and the other of the first high-refractive index layer and the first low-refractive index layer comprises a second substance;

one of the second high-refractive index layer and the second low-refractive index layer comprises a third substance and the other of the second high-refractive index layer and the second low-refractive index layer comprises a fourth substance; and

the first substance, the second substance, the third substance, and the fourth substance are different from one another.--